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ABSTRACT

This paper discusses a procedure for diagnosing adult educational needs, which the author developed and tested for her doctoral dissertation to study the work performance of attendant supervisors at a mental retardation facility. She describes the methodology used as ethnographic research, which entails an analytic description of a culture by looking at an institution as a culture of its own and, for example, attempting to illuminate the meaning of a supervisor's role and perceived performance in terms of the culture of the mental retardation facility. Steps outlined as part of the methodology include identification of salient issues, development of categories of concern as areas on which to focus the diagnosis, identification of symptoms, and movement through inference to symptoms to problems to educational needs. The procedure is called responsive because it is meant to respond to the information needs of the client and rigorous because the diagnosis is done with careful description and attempts to document the bases on which judgments are made. For example, the data collection process described involves a variety of techniques: Formal and informal interviews, observation, document analysis, and questionnaires. Strengths of the procedure are also discussed. A summary of the diagnostic study conducted for the dissertation is appended. (LMS)

Responsiveness With Rigor:
A Methodology for Diagnosis of Adult Education Needs Through Ethnographic Research

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Endemic to the adult education endeavor is the attempt to design educational programs to meet the educational needs of those who participate therein. Consequently, "needs assessment" figures prominantly in many program planning models found in widely used adult educational texts and many writers in adult education routinely stress the need to derive goals for educational programs from a diagnosis of needs of program clientele. As Atwood has said,

> The rationale for a sound diagnostic procedure in adult education seems to rest upon one very basic assumption--that learning experiences for adults should be designed to meet real educational needs.
>
> If one accepts this basic assumption, the importance of a diagnostic procedure as a basis for program planning becomes readily apparent. The procedure must be one that leads to the identification of real educational needs (1973, pp. 2-3).

Nowhere, perhaps, is it more important to design programs based on genuine educational or training needs than in inservice education programs directed toward the improvement of work performance--whether those programs be in state and local educational agencies, in hospitals, or in industry. It has increasingly come to be realized that continuing inservice education is a necessity not only for professionals such as physicians and teachers but also for line workers and their supervisors. At the same time, adult educators are increasingly being employed as staff development specialists, and it is incumbent upon them to determine the education or training needs of their clienteles before mounting inservice programs.

However, conversations with a number of program planners as well as perusal of at least one recently published investigation (Pennington and Green, 1976) reveal that rigorous needs

assessment is rarely done prior to program planning in the real world in which adult educators operate. All too frequently, programs are set in train based upon "some stimulus...usually a request or idea for a continuing education activity (Pennington and Green, 1976, p. 20)" or worse, what is convenient (Atwood, 1973, p. 1)." Even when needs assessment for adults is done, it is frequently cursory--such as a glance at census data--or lacking in rigor--such as random interviews with no unifying paradigm by which one may move from expressed desires or discontents to educational needs. Even needs assessments employing fairly sophisticated sampling procedures and statistical analyses are likely to leave those who conduct them with a mass of data from which it is difficult to conclude precisely what constitutes educational needs.

This may well be due to less than adequate conceptions of what needs assessment entails as well as to a lack of well-defined procedures for diagnostic data collection and analysis.

In her doctoral dissertation (Wolpert, 1976), the writer attempted to develop and field test a diagnostic procedure which would: (1) be responsive to the information needs of the client at whose behest it was conducted; (2) be of sufficient rigor to be defensible as a research endeavor; and (3) provide adult educators with conceptual and methodological tools for conducting diagnoses of adult education needs in a manner consonant with philosophical assumptions inherent in andragogy. Since the primary contribution of the diagnostic study is methodological, the emphasis of this paper is on methodological perspectives and strategies. However, for those who are curious as to how these

procedures and strategies were utilized in the actual investigation, a content summary of the diagnostic study is provided as an appendix.

The diagnostic procedure employed in the study is based upon a view of educational diagnosis developed over a number of years by faculty and graduate students in the Bureau of Studies in Adult Education at Indiana University. According to this perspective, educational diagnosis is analogous to medical diagnosis. When examining a patient, a physician interprets symptoms such as headache or stomach pain not in isolation but in terms of syndromes or patterns of symptoms that point to an underlying cause or disease. It is based upon that analytic procedure--not upon the symptoms themselves--that the physician prescribes appropriate treatment. In identifying symptoms, the physician also has a standard of health--a criterion of adequate systemic functioning--to guide him in determining whether or not symptoms do in fact exist. A symptom is by definition a signal of malfunction of some kind, and in order to recognize malfunction, one must have a definition of correct function.

In medical diagnosis, then, the physician first identifies symptomaticity in terms of a standard or criterion of healthful function and then looks for patterns of symptoms from which to infer a cause of disease. Only by going through all the steps can a physician know what treatment the patient needs and prescribe it. Were he to treat only the symptom by some palliative, the disease would in all probability worsen--with possibly fatal effect.

In like manner, an adult education diagnostician cannot hope to succeed if he prescribes educational programs which treat symptoms--and it is with symptom identification that most "needs assessment" surveys stop. An adult education diagnostician cannot be content with identification of symptoms; he must look beyond them; ascertain patterns of symptoms which seem to "fit together" into syndromes; infer a problem or disease entity; and then derive an education need. That educational need in turn forms the basis for development of goals of a prescribed educational program.

Thus, educational diagnosis as defined here is an inquiry procedure entailing judgment of the actual condition, in terms of a standard, for the purpose of prescription of an educational treatment for needs revealed. As inquiry, it is what Cronbach and Suppes call "decision-oriented"--that is, "designed for its relevance to a particular institution at a particular time (Cronbach and Suppes, 1969, p. 25)." Since decision-oriented inquiry is by definition bound by the constraints of the context in which it occurs, a suitable mode for research appears to be what Guba (1965) has termed "aexperimental inquiry" or an inquiry into actualities as opposed to "experimental inquiry" which manipulates variables in what is essentially an inquiry into possibilities. According to Guba, the question of the experimentalist is, "What would happen if....?" while the question posed by the aexperimentalist is, "What does happen in the real world?" Obviously, in attempting to determine educational needs of a given clientele, the diagnostician's efforts are bent toward answering the latter question, since the diagnostician's domain

is the world of actuality rather than the world of possibility.

The study which field tested the diagnostic procedure was an assessment of the educational needs of supervisory personnel at a large residential mental retardation facility in Indiana. Thus, the study both reflected and sought to portray the institutional constraints within which the investigator worked. The people whose educational needs were being diagnosed were first line or attendant supervisors. Since, as supervisors, they were engaged in essentially a human relations activity, the client and the investigator agreed that it would be appropriate to focus on supervisory performance as perceived by those supervised, attendants. It was, then, essentially a judgment of perceived adequacy of performance.

Based on a tradition of service developed over the years by the Bureau of Studies in Adult Education at Indiana University, upon the diagnostic procedure as a multileveled conceptual scheme, and upon her own background and training in evaluation, the investigator adopted the orientation of responsiveness, initially articulated in educational evaluation by Stake (1972) to govern the diagnostic inquiry. Just as responsive evaluation seeks to portray an educational program in all its complexity by describing a program's antecedents, transactions, and outcomes from many points of view, so responsive diagnosis as developed in the dissertation study sought to portray the client system whose educational needs were being diagnosed in its entirety by describing a variety of perceptions of its performance as well as its setting and events and issues which bore upon its ability to function. In this description, the diagnostician employed

ethnography, the analytic description of a culture, as a unifying paradigm within which data collection and analysis proceeded.

In employing the ethnographic paradigm, the diagnostician viewed the instituion in which the diagnosis occurred as a culture and endeavored to illuminate the meaning of a supervisor's role and perceived performance in terms of that culture. Since the philosophical orientation toward research of the ethnographer is humanist, ethnography explicitly makes use of "intelligent, informed intuition. . .in the search for truth (Broudy, Ennis, and Krimerman, 1973, p. 158)." Indeed, the ethnographic endeavor itself is ruminative, recollective, even poetic.

It is also, like poetry, disciplined. In using ethnography as a paradigm for data collection and analysis in the study, the diagnostician did not rely on unmediated or raw intuition but upon "intelligent, informed intuition." She was careful to collect data from a variety of sources, probing for meanings of the data at every step, and always constructing a larger entity--an ethnographic "poem"--from her data. Just as a poem lends itself to interpretation as a whole and on the basis of clues provided by its constituent parts--images, allusions, assonance, so the data in the diagnostic study constituted an interpretable whole to which each individual part contributed, provoking alternative inferences on the basis of alternative assumptions.

In her ethnographic description, the investigator utilized participant observation in interacting with elements in and surrounding the client system whose educational needs were being ascertained for a period of over three months. In the early part of the study, the diagnostician assumed the role of participant-

as-observer--interacting on a relatively long-term basis with the culture but with her identity as researcher known. In that role, the diagnostician iteratively interviewed and observed personnel at all levels of the institution in which the study was conducted in an effort to identify salient issues which were then classified into categories of concern--areas on which to focus the diagnostic inquiry.

From the salient issues, the investigator developed a survey instrument to be administered to a large number of employees in order to gather their perceptions of the performance adequacy of the client system. Particular attention was given to establishing content validity of the survey instrument. In the opinion of the investigator, content validity--the claim that an instrument adequately samples the universe of its possible content (Nunnally, 1970), was achieved: (1) through derivation of the items on the survey instrument from actual concerns voiced by personnel at all levels within the institution; (2) by asking the superintendent of the institution, eighteen members of middle management, and a union official to judge the significance of the behaviors and attributes referred to in the items and making adjustments in two items on the basis of their suggestions; and (3) by asking five members of the expert panel external to the institution to assess the importance of behaviors and attributes described in the items. (All behaviors and attributes were judged important by the experts.) Additionally, a concurrent validity study was conducted which yielded a rho coefficient of .98 between responses to the survey instrument and responses to randomly selected items during a telephone

interview two weeks later.

In order to develop a criterion of adequacy or standard of adequate function by which to identify symptomaticity, the investigator sent copies of the instrument to five experts outside of the institution. Each expert was knowledgeable in at least two of the following areas: adult education; the Indiana diagnostic procedure; inservice training; administration of residential mental retardation facilities. The experts were asked to set levels of perceived performance adequacy for each item on the survey instrument and, as noted above, to validate the importance of each item.

In the role of observer-as-participant, the investigator administered the survey instrument, visiting each unit on the grounds of the institution at least once on each shift over a period of two-and-one-half days and nights. By adopting the role of observer-as-participant--informally observing and conversing with employees as they completed the survey instrument, the investigator was able to supplement the data collected through the survey instrument with insights gained through observation of over 300 employees in their natural work sessions. Additional support was also given to the claim of content validity for the survey instrument through noting informal comments of the attendants as they responded to individual items.

Data collected through the survey instrument were quantitatively analyzed to reveal first level symptoms of problems. A symptom was said to exist if ten per cent or more of those responding to an item judged their supervisor as performing below the criterion of adequacy set by the expert panel for that item.

Thirty-eight of the thirty-nine items were judged symptomatic, with symptomaticity levels ranging from 79.6% to 10.6%.

In keeping with the humanist orientation to research implicit in the diagnostic view developed by the Bureau of Studies in Adult Education at Indiana University, the investigator employed judgment in the remaining steps of the diagnosis. Through content analysis, the items revelatory of symptoms were grouped into eight categories: (1) Fairness-Consistency: Communication; (2) Fairness-Consistency: Specific Tasks; (3) Fairness-Consistency: General Behavior; (4) Knowledge; (5) Communication; (6) Aid in Times of Difficulty; (7) Cooperation under Ordinary Circumstances; and (8) Affect-Concern: General Attitude. Specific inference--entailing the drawing of inferences datum by datum or from small subsets of data--was used to identify two sets of first-level problems in each of the categories. The sets were based upon alternative assumptions about the nature of the responses, one assumption being that the responses reflected reality of behavior and the alternative assumption being that the responses did not reflect the reality of behavior but misperception of behavior. For example, one highly symptomatic item (73% below criterion) read: "My supervisor assigns duties fairly and impartically." Interpreted according to the first assumption, the problem is one of actual inequity in allocation of duties. Interpreted according to the second assumption, the problem is one of communication--the supervisor is failing to communicate the basis on which duties are assigned, thereby giving the appearance of inequity.

The investigator then turned to holistic inference--an inferential mode based upon consideration of the totality of events observed--in an attempt to discern second-level or causative problems underlying the first-level problems identified through specific inference. Ruminatively, recollectively, the diagnostician drew upon all her observation to consider the members of the client system in their setting within the institution in an attempt to ascertain why their performance was perceived as so markedly inadequate by those whom they supervised. Essentially, the investigator found that not only had the institution failed to train supervisors, but it had also failed to define and legitimize the supervisory role and that it was unclear to many in the institution. As a result, supervisors failed to identify with institutional goals; relied on informal social structures which were viewed negatively by attendants; lacked identity and cohesiveness as a group; and appeared to operate in ignorance or defiance of institutional procedures.

As the final step in the diagnosis, educational needs--specific understandings, skills, or attitudes lacking yet required for effective performance--were inferentially derived from problems identified, and an intensive educational program for first line supervisors was recommended.

The dissertation study occurred in a specific institutional context, and the results can be said to apply only to that context. However, the methodology--identification of salient issues, development of categories of concern as areas on which to focus the diagnosis, identification of symptoms and, perhaps most crucially, the movement through inference from symptoms to

problems to educational needs--can be useful in diagnosing adult educational needs in many other settings. The use of ethnographic techniques, too, offers adult educators a viable means for data collection and analysis.

The procedure advocated and described herein combines responsiveness to the information needs of the client for whom the diagnosis is done with careful description and attempts to document the bases on which judgments are made. Rigor, the reduction of measurement error, was achieved through this careful description as well as through successful attempts to establish content and concurrent validity of the survey instrument. It is, the investigator contends, through this diagnostic approach that adult educators can fulfill their philosophical commitment to assess the educational needs of their clienteles in order to design programs to meet those needs.

In summary, the strengths of this diagnostic procedure conceptually lie principally in:

(1) the attempt to respond to the information needs of the client--especially through involvement of the client in the diagnosis at all stages. Through this involvement, the client is enabled not only to learn more about his organization but also to attain a diagnostic perspective. Thus, a diagnostician working through the diagnostic procedure collaboratively with a client is in actuality teaching that client how to conduct his/her own diagnoses in the future;

(2) the reliance on human judgment as an analytical tool, with the provision that this human judgment proceed through a carefully articulated sequence of inferences based on data obtained;

(3) the employment of categories of concern as foci for data collection and, even more importantly, for data analysis;

(4) the explicit reliance on levels of diagnosis of educational problems, moving from symptoms to problems to second level problems which both explain the first level problems and provide valuable clues as to what kinds of educational treatments are necessary.

The strengths of the model as operationalized herein lie principally in:

(1) the use of a combination of naturalistic inquiry procedures to elicit issues of concern to the client system. The use of a combination of methods--formal and informal interviews, observation, and document analysis--attentutes the possibility of bias associated with the use of only one method. Thus, for example, the investigator was able to "check" attendants' assertions that first line supervisors were severely inconsistent in allocation of leave days be referring to documents to see whether attendants had filed complaints about inconsistent allocation of leave days by their supervisors;

(2) the iterative nature of the interviews. In the early phases of the study especially, iteration permitted the investigator to question informants on the basis of information and insights gained in prior interviews. In this way, the investigator was able to test emergent hypotheses about issues of concern to the client system;

(3) the interactive data-gathering procedure, which required the investigator to visit each unit three or four times. This procedure provided invaluable opportunities for informal inter-

views and observation, yielding insights which the investigator would never have gained by simply distributing and later collecting the questionnaires;

(4) The successful attempts to establish content and concurrent validity obtained attests to the fact that rigor, reduction in measurement error, can in fact be enhanced by naturalistic inquiry methodology;

(5) the establishment of a symptomatic level by the client. This refinement in the step of identification of symptoms was deemed especially desirable in that it allowed the client an opportunity to make a significant contribution to the diagnosis according to his specialized knowledge as an administrator in addition to making more explicit and uniform the basis on which symptoms can be identified;

(6) the differential employment of various methods of analysis in the various stages of the procedure. Quantitative analysis was used for identification of symptoms; content analysis for delineation of symptomatic patterns; specific inference for determination of first level problems; and holistic inference for determination of second level problems and educational needs. This differentiation provides educational diagnosticians with a set of well-defined and explicit, yet flexible procedures for educational diagnosis.

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APPENDIX

Content Summary of the Diagnostic Study

Establishment of Appropriate Relations with the Client

Beginning with her first visit on April 27, and extending through May, 1976, the investigator had a number of lengthy meetings with the superintendent of Muscatatuck State Hospital and Training Center in which the dimensions of the diagnosis were decided and concerns were aired. The superintendent of Muscatatuck State Hospital and Training Center agreed to participate in the diagnosis at all stages with the understanding that certain primary data would remain the property of the investigator.

Identification of the Client System to Be Diagnosed

Discussion with the superintendent and other members of the staff at Muscatatuck State Hospital and Training Center resulted in a decision to focus on a diagnosis of the inservice training needs of first line supervisory personnel directly involved in resident care at Muscatatuck. Since the emphasis was on supervisory performance, the client and the investigator agreed that the best judges of that performance would be those who were supervised. Thus, the study, it was decided, would assess the adequacy of the supervisory performance of first line supervisors as perceived by the attendants whom they supervised.

Selection of the Categories of Concern

In order for a diagnosis to be responsive, it must address itself to issues which are considered important by the client system itself. Therefore, in the present study categories of concern were generated by the client system itself rather than by the diagnostician alone or by a review of relevant literature. Through a variety of naturalistic inquiry procedures including multiple formal and informal interviews, observation, and document analysis, a number of issues were identified which directly concerned the behaviors and attributes of first line supervisors. In addition, two pervasive issues, Change and Informal Structures, which did not directly concern the behaviors and attributes of first line supervisors, were identified, noted and reserved for use in analysis of the data to be collected from the attendants. The issues directly concerning supervisory behavior and attributes were analyzed and grouped into four categories of concern: (1) Fairness-Consistency; (2) Knowledge; (3) Communication-Cooperation; and (4) Affect-Concern.

Construction of the Survey Instrument Describing Supervisory Behaviors and Attributes

Drawing on the issues grouped into the various categories of concern, the investigator generated forty statements describing supervisory behaviors and attributes, with each statement representing a desirable behavior or attribute. For example, one state read: "The supervisor deals honestly with attendants." This instrument was administered to 18 members of the professional-managerial staff, to the superintendent, and to a union official. They were asked to assess the importance of each supervisory behavior or attribute according to the following scale:

1	2	3	4	5
Not Important	Of Minimal Importance	Moderately Important	Very Important	Essential

Based upon their responses and comments of the superintendent, one item was eliminated and slight alterations were made in four other items.

Establishment of Criteria of Adequacy

In order to establish criteria against which perceived performance of the first line supervisors could be judged, the revised statements of supervisory behaviors and attributes were combined into an instrument entitled Criteria of Adequacy which was submitted to a panel of experts each of whom was knowledgeable in at least two of the following areas: (1) adult education; (2) educational diagnosis; (3) hospital inservice training; (4) administration of mental retardation hospitals and training centers. The experts were asked to perform two tasks: (1) to rate each statement according to a five point Importance Scale:

1	2	3	4	5
Not Important	Of Minimal Importance	Moderately Important	Very Inportant	Essential

and (2) to set a level of adequate first line supervisory performance for each statement according to a six point Performance Adequacy Scale:

1	2	3	4	5	6
Never	Rarely	Sometimes	Frequently	Usually	Always

Responses of the expert panel indicated that panel members considered all the statements to be important; in no case was a modal rating lower than 3 "Moderately Important" given by the expert panel. Therefore, it was decided to include all statements in the survey instrument to be administered to attendants, the PLPI. The modal responses of the expert panel to the statements according to the Performance Adequacy Scale constituted the Criteria of Adequacy for the present study.

Identification of Symptoms of Problems

Development of the Perceived Level of Performance Index (PLPI)

After removing a duplicate "reliability item" from the Criteria of Adequacy statements sent to the expert panel, the investigator used the remaining 39 statements to construct a questionnaire, the Perceived Level of Performance Index (PLPI), which was the vehicle for the identification of symptoms of problems in performance of first line supervisors at Muscatatuck State Hospital and Training Center. Since responding to the entire questionnaire would require attendants to be absent from their duties for what the investigator and the client considered an excessive length of time, the questionnaire was divided into three forms: Form A contained statements 1-13 from the Criteria of Adequacy form sent to the expert panel as well as four identifying questions; Form B contained questions 14-26 from the Criteria of Adequacy form sent to the expert panel as well as four identifying questions. An introduction to the questionnaires asked the respondents to rate their own

supervisors and assured them of anonymity. The respondents were asked to respond to each statement according to the performance adequacy scale employed by the expert panel:

1	2	3	4	5	6
Never	Rarely	Sometimes	Frequently	Usually	Always

Data Collection

The investigator collected data by personally visiting each of the 39 units at least once on each shift over a period of three days, July 20, 21, and 22, 1976. The investigator remained with the attendants while they completed the PLPI--personally assuring them of confidentiality, answering their questions, and observing both their working conditions and the manner in which they completed the PLPI. By personally involving herself in the data collection, the investigator was able to observe and interact with attendants as they attempted to cope with something of a crisis in their working lives--the superintendent's ban on overtime hiring and the subsequent necessity for temporary reassignments to be made.

Identification of Symptoms

Responses of the attendants for each item were compared with the criteria of adequacy established by the expert panel. The superintendent was asked to determine, on the basis of his experience as an administrator, what percentage of responses would have to fall below the criterion of adequacy in order for the responses to a statement to be symptomatic of an educational problem. The superintendent set the symptomatic level at 10%. With the exception of one item which was eliminated from analysis, responses to all of the items on the PLPI were symptomatic, ranging from a high level of symptomaticity of 79.6% of responses falling below criterion to a low level of symptomaticity of 10.6% of responses falling below criterion.

Delineation of Symptomatic Patterns

Through content analysis of the items involving assignment of them to relevant categories and subcategories of concern, the investigator delineated eight symptomatic patterns: (1) Fairness-Consistency: Communication; (2) Fairness-Consistency: Specific Tasks; (3) Fairness-Consistency: General Behavior; (4) Knowledge; (5) Communication; (6) Aid in Times of Difficulty; (7) Cooperation under Ordinary Circumstances; and (8) Affect-Concern: General Attitude.

Determination of the Nature of the Problems

A problem is defined as a human difficulty with respect to understanding, action, or feeling that prevents the attainment of a desirable condition or state of being. Two modes of inference were employed by the investigator in her attempt to determine what kind of problems underlay the patterns of symptoms delineated. Specific inference, an inferential mode entailing the drawing of inferences datum by datum or from relatively small subsets of data, was used to identify first level problems associated with each of the symptomatic patterns according to two alternative assumptions: (1) that the perceptions of attendants about the behaviors and attributes of their supervisors reflected reality and (2) that the perceptions of attendants about the

behaviors and attributes of their supervisors did not reflect reality. Holistic inference, an inferential mode entailing the drawing of inferences from the totality of events observed, was used to identify causative second level problems associated with the following areas: (1) change-acceptability; (2) knowledge-credibility; (3) role delineation-legitimization; (4) informal structures-consistency of behavior; (5) help-valuing; (6) consultation-cohesion; and (7) differentiation-identity. On the basis of the analysis of a second level problem, the investigator concluded that the cause of the supervisors' problems was primarily the fact that the institution had given the first line supervisors certain duties to perform but had failed to define the supervisory role or to provide the necessary conceptual and operational tools to enable the supervisor to perform in a manner credible both to those whom he/she supervised and to those to whom he/she was accountable.

Educational Needs of First Line Supervisors at Muscatatuck State Hospital and Training Center

Educational needs are specific understandings, skills, or attitudes which are lacking yet required for effective functioning of the client system. Through holistic inference from first and second level problems identified, the investigator has articulated a series of needs associated with understanding, skill, and attitude. The needs associated with understanding are: (1) understanding the Muscatatuck State Hospital and Training Center as a whole and of the Supervisor's role within the institution; (2) understanding of the specific duties associated with the role of first line supervisor; and (3) understanding of new methods of resident care. The needs associated with skill are: (1) skill in setting standards/objectives by which to judge the work of attendants; (2) skill in carrying out institutional policies and in implementing institutional procedures in a fair and impartial manner; (3) skill in communicating with attendants on a one-to-one basis; and (4) skill in communicating in group situations. The needs associated with attitude are: (1) a sense of commitment to the institution and to instructional objectives; (2) an individual sense of supervisory identity; (3) a sense of cohesiveness with other first line supervisors within the institution; (4) a sense of the supervisor himself/herself as a member of a team charged with care of residents; and (5) a sense of responsiveness to the needs of the attendants whom he/she supervises.

Although these needs are listed separately, they are not discrete but synergistically interactive. Increases in understanding lead to increases in skill and to more positive attitudes: increases in skill development lead to more positive attitudes and to increases in understanding; more positive attitudes lead to increases in skill and increases in understanding. Therefore, it is important for the institution to address needs in all areas if it is to enable its first line supervisors to function more effectively.